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**DEPARTMENT OF COMMERCE**

**National Oceanic and Atmospheric Administration**

**RIN 0648-XE122**

**Marine Mammal Stock Assessment Reports**

**AGENCY:** National Marine Fisheries Service (NMFS), National Oceanic and Atmospheric Administration (NOAA), Commerce.

**ACTION:** Notice of availability; response to comments.

**SUMMARY:** As required by the Marine Mammal Protection Act (MMPA), NMFS has considered public comments for revisions of the 2015 marine mammal stock assessment reports (SARs).

**ADDRESSES:** Electronic copies of SARs are available on the Internet as regional compilations and individual reports at the following address:

*<http://www.nmfs.noaa.gov/pr/sars/>.*

A list of references cited in this notice is available at [www.regulations.gov](http://www.regulations.gov) (search for docket NOAA-NMFS-2015-0108) or upon request.

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**SUPPLEMENTARY INFORMATION:**

**Background**

Section 117 of the MMPA (16 U.S.C. 1361 *et seq.*) requires NMFS and the U.S. Fish and Wildlife Service (FWS) to prepare SARs for each stock of marine mammals occurring in waters under the jurisdiction of the United States. These reports contain information regarding the distribution and abundance of the stock, population growth rates and trends, the stock's Potential Biological Removal (PBR) level, estimates of annual human-caused mortality and serious injury from all sources, descriptions of the fisheries with which the stock interacts, and the status of the stock. Initial reports were completed in 1995.

The MMPA requires NMFS and FWS to review the SARs at least annually for strategic stocks and stocks for which significant new information is available, and at least once every three years for non-strategic stocks. NMFS and FWS are required to revise a SAR if the status of the stock has changed or can be more accurately determined. NMFS, in conjunction with the Alaska, Atlantic, and Pacific Scientific Review Groups (SRGs), reviewed the status of marine mammal stocks as required and revised reports in each of the three regions.

NMFS updated SARs for 2015, and the revised reports were made available for public review and comment for 90 days (80 FR 58705, September 20, 2015). NMFS received comments on the draft SARs and has revised the reports as necessary. This notice announces the availability of the final 2015 reports for the 108 stocks that are currently finalized. These reports are available on NMFS's website (see **ADDRESSES**).

### **Comments and Responses**

NMFS received letters containing comments on the draft 2015 SARs from the Marine Mammal Commission (Commission); five non-governmental organizations (The

Humane Society of the United States (HSUS), Center for Biological Diversity (CBD), Whale and Dolphin Conservation (WDC), Turtle Island Restoration Network (TIRN), and the Hawaii Longline Association (HLA)); and one individual. Responses to substantive comments are below; comments on actions not related to the SARs are not included below. Comments suggesting editorial or minor clarifying changes were incorporated in the reports, but they are not included in the summary of comments and responses. In some cases, NMFS's responses state that comments would be considered or incorporated in future revisions of the SARs rather than being incorporated into the final 2015 SARs.

*Comments on National Issues*

*Comment 1:* The SAR administrative process must be improved; it is confusing, inefficient, and produces final SARs that are not based upon the best available scientific information. Because of the inefficient process used to produce SARs, the draft SARs fail to rely upon the best available data (i.e., the most current data that it is practicable to use), contrary to the MMPA. For example, the draft 2015 SAR only reports data collected through the year 2013, even though 2014 data are readily available. We appreciate that it is not practicable to incorporate into SARs the absolute most recently collected data; nevertheless, there is no credible justification to continue the present two-year delay in the use of information.

*Response:* The marine mammal SARs are based upon the best available scientific information, and NMFS strives to update the SARs with as timely data as possible. In order to develop annual mortality and serious injury estimates, we do our best to ensure all records are accurately accounted for in that year. In some cases, this is contingent on

such things as bycatch analysis, data entry, and assessment of available data to make determinations of severity of injury, confirmation of species based on morphological and/or molecular samples collected, etc. Additionally, the SARs incorporate injury determinations that have been assessed pursuant to the NMFS 2012 Policy and Procedure for Distinguishing Serious from Non-Serious Injury of Marine Mammals (NMFS Policy Directive PD 02-038 and NMFS Instruction 02-038-01) which requires several phases of review by the SRGs. Reporting on incomplete annual mortality and serious injury estimates could result in underestimating actual levels. The MMPA requires us to report mean annual mortality and serious injury estimates, and we try to ensure that we are accounting for all available data before we summarize those data. With respect to abundance, in some cases we provide census rather than abundance estimates and the accounting process to obtain the minimum number alive requires two years of sightings to get a stable count, after which the data are analyzed and entered into the SAR in the third year. All animals are not seen every year; waiting two years assures that greater than 90% of the animals still alive will be included in the count. As a result of the review and revision process, data used for these determinations typically lag two years behind the year of the SAR.

*Comment 2:* Unlike mortality and serious injury estimates for small cetaceans, where extra time may be needed to obtain fishing effort and to expand observed takes to obtain fleet-wide estimates, for large cetaceans mortality estimates are direct minimum counts based on discovery of carcasses and any necropsies are generally completed promptly. There is no need to delay reporting by two years as has been common in the SARs.

*Response:* Large whale mortality reports, like all interactions, go through the review and publication process outlined in the NMFS 2012 Policy and Procedure for Distinguishing Serious from Non-Serious Injury of Marine Mammals. NMFS produces annual marine mammal serious injury and mortality reports, which involves a clear process for review and publication. The serious injury and mortality data contained in the SARs come from these reports once they have been fully vetted. Therefore, the mortality data reported in the SARs are subject to the same delay outlined in the response to Comment 1.

*Comment 3:* There are grossly outdated estimates of abundance for many stocks. The most recently proposed revision of NMFS's Guidelines for Assessing Marine Mammal Stocks (GAMMS) provided recommendations for addressing aging data by precautionarily reducing the Minimum Population Estimate (Nmin) annually (and consequently the PBR), until such time as new abundance data can be obtained. For stocks with outdated estimates this was often not done. NMFS's regional offices should follow the GAMMS in these cases and downwardly revise the PBRs for these stocks.

*Response:* NMFS recently finalized revisions to the GAMMS (available at <http://www.nmfs.noaa.gov/pr/sars/pdf/gamms2016.pdf>). Regarding outdated abundance estimates, we did not finalize the proposed approach recommended by the GAMMS workshop participants. Rather, we will be further analyzing this issue, as the challenge of outdated abundance estimates continues and the problems resulting from stocks with "undetermined" PBR persists. Should we contemplate changes to the guidelines regarding this topic in the future, we will solicit public review and comment in a separate action.

*Comment 4:* There is an unacceptably high percentage of stocks with “undetermined” or “unknown” PBR levels.

*Response:* NMFS acknowledges this. Currently, the GAMMS direct that for stocks with abundance data greater than eight years old, PBR be considered “undetermined.” See response to Comment 3.

*Comment 5:* With regard to status as “strategic” or “non-strategic,” it would seem prudent to declare stocks with unknown or undetermined PBRs as “strategic” unless there is clear and compelling evidence that there are no fishery interactions (i.e., data exist that there are none as opposed to a lack of data). Such an approach would be consistent with the overall purposes of the MMPA.

*Response:* NMFS appreciates this recommendation. However, such designations must follow the statutory definition of “strategic”: human-caused mortality exceeds PBR; the best available science shows the stock is declining and likely to be listed as threatened under the ESA within the foreseeable future; or that is currently listed as threatened or endangered under the ESA or is designated as depleted (MMPA section 3).

*Comment 6:* The GAMMS recommend that peer-reviewed literature should be a primary source of information. In most regions there appears to be great reliance on gray literature (e.g., NMFS Tech Memos) and on unpublished manuscripts (e.g., results of studies stated to be “in prep”) and even personal communications; this needs to be corrected. By not making such literature available for review by the public, the public cannot adequately comment on whether such literature constitutes the best available science.

*Response:* The SARs are to be based on the best available science. The use of

unpublished reports and data within SARs is discouraged. NMFS strives to use peer-reviewed data as the basis for SARs. NMFS often relies on science that has been assessed through the NMFS Science Center's internal expert review process and/or has been subjected to other external expert review to ensure that information is not only high quality but is available for management decisions in a timely fashion. NMFS may rely on the SRGs to provide independent expert reviews of particular components of new science to be incorporated into the SARs to ensure that these components constitute the best available scientific information. Likewise, upon SRG review of these components and the draft SARs themselves, NMFS considers the SRG review of the draft SARs to constitute peer review and to meet the requirements of the OMB Peer Review Bulletin and the Information Quality Act. NMFS is undertaking an effort to remove references to unpublished manuscripts and personal communications from the SARs, and aims to fully implement this effort with the 2016 final SARs.

*Comment 7:* The Commission recommends that NMFS specify the criteria that it intends to use to assess the appropriateness of its estimates of carcass recovery and cryptic mortality rates, and that it include in its stock assessment survey and research plans the collection of those data that are needed to estimate total mortality for all stocks. The Commission suggests discussion of collaborative opportunities in conjunction with the joint SRG meeting in February 2016.

*Response:* We agree that there is a need to better understand and estimate undetected marine mammal mortalities and serious injuries, and a need to evaluate the use of correction factors for marine mammal mortality estimates. The issue of cryptic mortality was discussed at the February 2016 joint SRG Meeting. NMFS looks forward

to working with the Commission and the SRGs on this issue.

*Comments on Atlantic Regional Reports*

*Comment 8:* In the North Atlantic right whale report, Table 1 documenting mortality appears to lack accounting for several mortalities. For example, a male calf that was killed in a vessel strike in Maine in July 2010 does not appear to have been included. Further, there was an abandoned calf in the Southeastern U.S. in March 2011, and, that same month right whale #1308 was killed by a ship strike, thereby orphaning her newborn calf. At the very least, this latter death of a documented right whale mother with calf should also assume the young, dependent calf died as well and its death added to the total for that year.

*Response:* The right whale calf killed in July 2010 is included in Table 1 as a vessel strike mortality and has since been identified as #3901. We do not include abandoned calves if the mother is not known to have been killed or injured by human impact. The abandonment could be the result of poor maternal care. The calf of right whale #1308 is included in the Table 1 as a serious injury due to vessel strike according to the NMFS 2012 Policy and Procedure for Distinguishing Serious from Non-Serious Injury of Marine Mammals (Category L8=dependent calf of a dead or seriously injured mother).

*Comment 9:* The Commission, HSUS, CBD, and WDC recommend that multiple mortalities and/or serious injuries to several North Atlantic right whales (including #1151, 1311, 2160, 2460, 2660, 3111, 3302, [3308], 3692, and 3945) should be included in Table 2 of the SAR.

*Response:* The following is a summary statement about each case. Cases were



reviewed by NMFS Northeast Fisheries Science Center (NEFSC) staff and determinations made by NEFSC staff were later reviewed by experienced staff at all other Fisheries Science Centers, per the NMFS Policy and Procedure for Distinguishing Serious from Non-Serious Injury of Marine Mammals. NMFS staff look for evidence of significant health decline post event. We do not currently have a method to address sublethal effects or more subtle/slow health decline. Therefore, none of the recommended cases were incorporated into Table 2 of the SAR.

- Whale #1151. This whale was seen free of gear and with a calf in the Bay of Fundy on 28 August 2009 and was resighted soon after with two wraps of line around her rostrum and body. All entangling gear was removed on 4 September 2009. Following disentanglement, she appeared to be swimming normally and, although she showed signs of compromise typical of females completing their calving and nursing cycle, NMFS determined the entanglement had not caused serious injury. However, she was still in a compromised condition in 2011 and had declined further when seen for the last time in June 2012. The Commission believes this case warrants a conservative redetermination that the 2009 entanglement did result in a serious injury.
- *Response:* NMFS reviewers considered any health changes post-disentanglement to be representative of normal inter-year fluctuations and comparable to the overall health of the population during the time frame in question.
- Whale #2460. This whale was last seen in May 2012 in compromised health and with severe entanglement-related scars and wounds on her peduncle,

additional entanglement scars on her head, and lesions on her back but without attached gear. The Commission is concerned that the observed entanglement injuries significantly compromised her health and potential survival, and believes that a conservative injury assessment would warrant listing the scars and wounds observed in 2012 as indicative of a serious injury.

- *Response:* The animal's injuries are showing evidence of healing; the health status of this whale is comparable to the overall health of the non-injured population during the time frame in question.
- The 2007 calf of #2460. This calf was euthanized in January 2009 when it stranded in North Carolina. The spine of this animal was grossly misaligned and this followed the documentation of deep entanglement marks on the calf at age 8 months. Researchers at the scene speculated that the spine deformity resulted from an entanglement. This animal's death should be prorated as a serious injury resulting from entanglement, much as the agency did for the serious injury in the table dated 7/18/2009.
- *Response:* The injury that led to the demise of this calf was acquired in 2007, so this event is counted as an entanglement mortality for that year, which does not fall within the time frame of this report (2009-2013).
- Calf of Whale #2660. The table notes that this whale was missing her dependent calf at the time of her 2011 sighting when seriously injured and in deplorable physical condition; why is the calf not also counted as a mortality?
- *Response:* This calf, now #4160, has been resighted in good health.
- Whale #3111. This whale is listed in the table as a pro-rated serious injury.

Since the animal was last seen alive when badly entangled, it seems that this should be considered entirely fishery-related.

- *Response:* This whale has been resighted in much improved condition; he appears to be gear free, but this is not yet confirmed. This event is similar to #2029's entanglement. We will continue to prorate his injury as L10 (0.75) until he is either confirmed gear free or shows signs of significant health decline.
- Whale #3398. This whale was seen in July 2012 with extensive entanglement wounds on his peduncle and fluke insertion and additional scars on his mouth and left flipper, and possibly around his blowhole. Resightings suggest these wounds appear to have compromised his health for more than two years, raising the possibility of suffering from chronic effects from the 2012 entanglement. The Commission believes that the record justifies a conservative determination of serious injury for this individual.
- *Response:* NMFS reviewers determined that this comment pertains to whale #3308 (not #3398 as identified in the comment). NMFS agrees that the lesions have increased; however, the animal's injuries are healing and its skin condition is comparable to the overall population.
- Whale #3946. This whale was affected by two separate entanglement events. In December 2012 she was gear-free, but with severe entanglement wounds on her peduncle and flukes, and possible additional scars on her head. She was resighted later carrying lines from a new entanglement and showing signs that her condition had declined – she appeared thinner and had developed lesions

on her body. When last seen in May 2014 she was confirmed to be free of gear. Given that these wounds appear to have compromised her health for more than two years, a serious injury determination would be an appropriate and conservative assessment for this individual.

- *Response:* The injuries are showing evidence of healing; the health status of this whale is comparable to the overall health of the non-injured population during the time frame in question.
- Whale #3692. This whale, accompanied by a calf, was observed in March 2013 off South Carolina with a fresh propeller injury on her right fluke. When she was last sighted in April 2014 her condition was poor; her fluke had fallen off, blisters and lesions had formed at several points on her body and head, and she appeared to be thin. Given the decline in her condition following the propeller wound, this case should be considered a serious injury.
- *Response:* The animal's injuries are showing evidence of healing. Its health status is comparable to the overall health of the non-injured population during the time frame in question.
- Whale #2160. This animal was seen gear-free in April 2013 with severe scars and a large open wound on his tail stock apparently from an entanglement. He also had rake marks, skin lesions, and poor skin color behind the blowhole, suggesting poor condition; he has not been resighted. Given the severe nature of his wounds and compromised condition, this case should be considered a serious injury.
- *Response:* This whale has since been resighted. The injuries are showing

evidence of healing; the health status of this whale is comparable to the overall health of the non-injured population during the time frame in question.

- Whale #3302. This individual is not listed in the table, but has not been seen since the last sighting on November 11, 2011 when seriously entangled. This case should be at least a pro-rated serious injury. At what point, when no longer being sighted, will NMFS consider it dead and pro-rate the death as fishery-related?
- *Response:* This whale is included in the table as a serious injury due to entanglement, which is given the same score as “dead.” NMFS will not presume the whale is dead until its death is confirmed and the animal is removed from the population. The initial entanglement date is 4/22/11.
- Unk Whale. A right whale hit by a vessel on 12/7/2012 is pro-rated as an injury at 0.52. Please explain the basis for this very precise pro-ration.
- *Response:* The basis for the proration values is explained in the NMFS Procedure for Distinguishing Serious from Non-Serious Injury of Marine Mammals (NMFS Instruction 02-038-01). The vessel strike event described fits two categories: L6b - a vessel less than 65 feet traveling at greater than 10 knots (prorated as 0.20 serious injury), and L11 - confirmed laceration of unknown depth, includes observation of blood in water (prorated as 0.52 serious injury). When more than one criteria applies to an event, we apply the greater value.
- Whale #1311. This animal was found dead on 8/11/2013. Video taken at the time shows the whale floating with line entering its mouth and associated

wrapping wounds around its head. It was last seen alive in April 2013 with no signs of entanglement.

- *Response:* The carcass of this whale was not necropsied; thus, it does not currently meet the criteria for determining human interaction mortalities.

Without a necropsy, we could not determine if the cause of death was due to entanglement or possible vessel strike.

*Comment 10:* The Commission is concerned that the long-finned pilot whale SAR does not sufficiently explain the extent to which abundance may be underestimated. The Commission recommends that NMFS consider whether further analysis of past surveys could clarify: 1) the proportions of the long-finned pilot whale stock using waters near the Gulf Stream off the U.S. northeast coast and Canada, and 2) the extent to which the new population estimate is negatively biased and the new PBR is set too low.

*Response:* NMFS recognizes that the current abundance estimate is likely biased low. Therefore, we are conducting additional analyses to develop more appropriate abundance estimates for both long- and short-finned pilot whales.

*Comment 11:* The Status of Stock section of the short-finned pilot whale – Western North Atlantic Stock assessment report did not state that the average annual human-caused M/SI is below the PBR; this conclusion had been included in previous reports for this stock. There is no new statement in the 2015 SAR to describe current M/SI totals relative to PBR. The Commission recommends that the deleted sentence be replaced by one stating that the point estimate for average annual human-caused M/SI does not exceed the stock's PBR, but it is roughly equal to the PBR and clearly greater than 10 percent of the PBR. Given the possibility that fishery-related M/SI is above PBR,

the Commission recommends further that the western North Atlantic short-finned pilot whale stock be categorized as “strategic.”

*Response:* We have reinstated the sentence indicating the 2009-2013 mean annual human-caused M/SI does not exceed PBR, as this is still the case. While there is no “new” statement, the SAR continues to state: “Total U.S. fishery-related mortality and serious injury attributed to short-finned pilot whales exceeds 10% of the calculated PBR.” Following the GAMMS, PBR calculations already include a precautionary approach that accounts for uncertainty, and we have compared the five-year mean annual M/SI to PBR. Designating stocks that fluctuate around PBR from year to year as strategic is a larger issue that we plan to raise with the Scientific Review Groups.

*Comment 12:* Most stocks of cetaceans in the Gulf of Mexico are either known or likely to have been adversely affected by the 2010 Deepwater Horizon (DWH) oil spill. Following the spill, data were collected on many of these stocks as part of the Natural Resource Damage Assessment (NRDA) process, but those data are not yet available to be used in stock assessments. The Commission recommends that NMFS make every effort to publish and release all survey and related data it has on Gulf of Mexico cetacean stocks as soon as the NRDA process is complete, and, where appropriate, conduct new surveys to enable assessments of the extent to which abundances of the Gulf of Mexico cetacean stocks have changed in recent years.

*Response:* The DWH litigation is recently completed; as NRDA data become available, we will continue to publish and incorporate these data into the SARs as appropriate.

*Comment 13:* In some cases (e.g., Jacksonville estuarine stock, many of the Bay,

Sound, and Estuary (BSE) stocks of bottlenose dolphins in the Gulf of Mexico) the most recent estimates of abundance are around 20 years old. Many of these same stocks with outdated abundance estimates have been recently subjected to unusual mortality events (UMEs). The lack of usable stock abundance data for so many of the bottlenose dolphin stocks is unacceptable and highly risk prone, and must be remedied on a priority basis for future SARs.

*Response:* NMFS acknowledges that the abundance estimates of many of the BSE stocks of bottlenose dolphins are outdated. NMFS will collect data in 2016 to update abundance estimates for Galveston Bay, Texas and Timbalier-Terrebonne Bays, Louisiana bottlenose dolphin stocks. As resources continue to be limited, NMFS has developed a Threat Assessment Priority Scoring System for prioritizing research on common bottlenose dolphin stocks (see Phillips and Rosel 2014).

*Comment 14:* Tracking stock status is often confounded by differences in survey area or methodology. For example, the best estimate for the Southern North Carolina Estuarine System stock of bottlenose dolphins declined from 1,614 in the 2012 SAR to 188 in the 2013 SAR, which was the result of using a 2006 mark-recapture survey in the 2013 SAR whereas the 2012 SAR used an aerial line-transect study. The abundance is now considered “unknown” because all of the surveys on which estimates were made are now more than eight years old. The agency must take a more careful look at its survey intervals and design to assure comparability in range, seasons, effort, methodology, and other factors that are compounding the ability to more precisely define population estimates and to provide trend data, as required by the MMPA.

*Response:* NMFS has standardized its survey methodology for large-scale aerial



and ship surveys within the Atlantic, and following the 2016 ship surveys, we should be able to begin analyzing trends. Large-scale surveys within the Gulf of Mexico are also standardized, and with additional data collection, trend analysis should be possible. NMFS convened a workshop and prepared a technical memorandum to create a “standard” approach to photo-ID capture-mark-recapture techniques for estimating abundance of bay, sound, and estuary populations of bottlenose dolphins along the East Coast and Gulf of Mexico (Rosel *et al.* 2011). While progress is being made, at present resource constraints limit the NMFS Southeast Fisheries Science Center’s (SEFSC) ability to analyze trends for the stocks for which there are data. Because the SEFSC marine mammal data collection program is generally supported through collaborations with other Federal agencies, research priorities (including areas surveyed) are balanced between the data needs of NMFS and our external partners.

*Comment 15:* NMFS should prioritize observer coverage for fisheries that have self-reported takes but where observer coverage is either entirely lacking, occurring intermittently, or at such low levels that updated and reliable estimates of fishery-related mortality are not possible. Stock assessments cannot meaningfully report the statutorily required information on status and threats to marine mammals until and unless observer coverage is increased in fisheries with self-reported mortalities, evidence of strandings occurring at elevated rates that coincide with the greatest effort by the fishery, or where observer coverage has documented takes that may or may not have been incorporated in the SARs.

*Response:* NMFS’ observer programs fulfill a wide range of requirements under MMPA, ESA, and the Magnuson-Stevens Fishery Conservation and Management Act

(MSA). Observer programs serve a wide range of purposes under these three statutes, including, but not limited to:

- Providing information on commercial catches to inform fishery stock assessments and management (e.g., setting of annual catch limits).
- Accounting for total catches in some fisheries, and discards in other fisheries, to support the monitoring of fishery-, vessel-, or sector-specific catches of managed species.
- Monitoring fishery-related mortality and serious injury of marine mammals.
- Monitoring incidental take limits of species that are listed under the ESA.
- Collecting biological samples (e.g., otoliths, gonads, size data, genetic data for species identification purposes) to support stock assessment processes.
- Supporting innovative bycatch reduction and avoidance programs.
- Helping to promote the safety of human life at sea.

Each NMFS region administers an observer program to address programmatic mandates under the MMPA, ESA, and MSA. The data collected by these observer programs support the management and conservation of fisheries, protected resources, and marine ecosystems throughout the United States' exclusive economic zone. Given the wide array of needs and limited resources, NMFS prioritizes observer coverage based on a number of factors. MMPA section 118(d)(4) specifies that the highest priority for allocation shall be for commercial fisheries that have incidental mortality or serious injury of marine mammals from stocks listed as endangered species or threatened species under the ESA; the second highest priority shall be for commercial fisheries that have incidental mortality and serious injury of marine mammals from strategic stocks; and the

third highest priority for allocation shall be for commercial fisheries that have incidental mortality or serious injury of marine mammals from stocks for which the level of incidental mortality and serious injury is uncertain. NMFS uses this guidance when allocating funding to observe fisheries with little or no current observer coverage. For example, in 2012 and 2013, NMFS observed the Southeast Alaska drift gillnet fishery, which had not been previously observed but was potentially interacting with ESA-listed humpback whales and a strategic stock of harbor porpoise (i.e., the highest and second highest priorities for observer coverage noted in the MMPA).

*Comment 16:* In the North Atlantic right whale report's section on Population Size, the phrase "known to be alive" should be changed to "presumed to be alive," which is the wording used by the author of the 2011 Right Whale Report Cards from which this number was taken. At the end of this section, the sentence: "For example, the minimum number alive for 2002 was calculated to be 313 from a 15 June 2006 data set and revised to 325 using the 30 May 2007 data set" has been in this SAR since 2008 and seems stale.

*Response:* This number is not taken from the Report Card; the Nmin value for right whales reported within the SAR includes only animals known to be alive because they were either seen during the reference year or seen both before and after the reference year. (Hence, there is no presumption of life.) The count of animals known to be alive is updated every year. Animals not seen for three or more years may be added back if they are shown to be alive in a subsequent year. The example given regarding the 2006 versus 2007 data makes this point.

*Comment 17:* In the "Current and Maximum Net Productivity Rates" section of the North Atlantic right whale report, the information in the third paragraph is outdated

regarding calving rates through 1992. More recent data on intervals are available from the right whale catalog, and are presented annually at right whale consortium meetings. For example, since the paper cited in the draft SAR for that information (Knowlton *et al.* 1994), there are data indicating the calving interval improved, but in more recent years has returned to lengthy or even increasing intervals. Later in the section the draft SAR cites the high proportion of juveniles in the population as of publications dated 1998 and 2001 (Hamilton *et al.* 1998, Best *et al.* 2001). While this may still be true, is there no more current information?

*Response:* This SAR has been amended to include the “production/Nmin,” which is a better description of average productivity than calving interval. As a point of clarification, the draft SAR states on page 7: “An analysis of the age structure of this population suggests that it contains a smaller proportion of juvenile whales than expected (Hamilton *et al.* 1998; Best *et al.* 2001), which may reflect lowered recruitment and/or high juvenile mortality.”

*Comment 18:* The North Atlantic right whale report’s Background section acknowledges the large number of right whale carcasses documented but not necropsied to determine likely cause of death. We believe NMFS must undertake an effort through modelling to apportion mortalities among categories such as unknown, vessel strike, or entanglement based on historic proportions of deaths from necropsied animals. It should be possible to assign a proportional cause of death to the number of carcasses that were not retrieved/necropsied. Our records show that at least seven carcasses were not retrieved between 2009-2013.

*Response:* We agree that this work would be valuable. In the future we intend to

use a statistically-based estimate of fishing mortality. It is more complex than assigning a simple proportion to discovered carcasses, and we will use mark recapture data to attribute causation to latent mortality as well as attribute mortality causes to discovered carcasses unable to receive a proper necropsy.

*Comment 19:* The North Atlantic right whale report's Fishery-Related Serious Injury and Mortality section cites Van der Hoop *et al.* (2012) as indicating that take reduction measures may not be working adequately to reduce mortality from entanglements and additional measures need to be taken. A more recent publication by NMFSs authors reaching the same conclusion (Pace *et al.* 2014) should also be included.

*Response:* The Pace *et al.* (2014) reference was added to the SAR.

*Comment 20:* In the Gulf of Maine humpback whale SAR, NMFS relies on maps and other information based almost solely on shipboards surveys. NMFS should reconsider this approach and, as it does with North Atlantic right whales, also rely on catalog data to glean information on distribution and similar vital characterizations of the population. In addition, NMFS is relying on outdated information about stock structure and use of winter habitats in the Caribbean, as Stevick and colleagues (2015) have provided more recent insight from genetic and other data that indicate that more than one stock appears to be using the eastern Caribbean. NMFS also cites Barco *et al.* (2002) that suggests that the mid-Atlantic may represent a supplemental winter feeding area for humpback whales. There is photographic evidence of their increasing presence and winter use of the waters between New York and Delaware Bay in spring, summer, and fall, some of which shows site fidelity within and between seasons, with at least one quarter of the photographically identified animals in a database matched to the Gulf of

Maine stock. This information should be considered in updating the SAR. The Virginia Marine Science Museum has also documented sightings and responded to stranded animals in significant numbers in the Chesapeake Bay region since this 2002 citation.

*Response:* The SAR's map is consistent with maps in other SARs in which the abundance estimate is derived from a line-transect survey (including both aerial and shipboard effort). The humpback whale SAR uses the best estimate available and has frequently used line-transect surveys in the past; the estimates derived from the 2008 and 2011 surveys are reported in the SAR.

The Gulf of Maine stock of humpback whales is somewhere on the order of 20% of a larger breeding population, and constitutes a cluster of feeding aggregations that shows some site fidelity to the Gulf of Maine. Although a single Gulf of Maine animal was killed in the Bequia indigenous hunt (within the eastern Caribbean), overwhelming evidence exists to show the Gulf of Maine stock uses the western Caribbean as a breeding ground along with four to five other feeding aggregations. The bulk of the animals within the eastern Caribbean show no site fidelity to the Gulf of Maine. The other facts cited within the comment are mostly anecdotal and have not been adjusted for search effort.

*Comment 21:* In the Gulf of Maine humpback whale SAR, NMFS omits new information that was recently considered in its global status review on humpback whales. The Population Size section does not provide data from MONAH (the international study titled "More North Atlantic Humpbacks") surveys, although these were cited in the recent NMFS global status review for the species (Bettridge *et al.* 2015). NMFS also omits consideration that the Robbins (2007) study also supports low reproductive rates in the species, not solely low calf survival. This should be included so as not to leave readers

with the idea that the only data available are outside confidence intervals.

*Response:* The population of humpback whales surveyed through the MONAH study comprises more than the humpback whales that feed in the Gulf of Maine, therefore it is not appropriate to use the MONAH abundance estimate for the abundance estimate for the Gulf of Maine stock. We modified the SAR language with regard to confidence intervals and noted that Robbins (2007) found reproductive rates to be highly variable.

*Comment 22:* The Gulf of Maine humpback whale SAR's statement that the apparent calf survival rate is 0.664 as an "intermediate" value between two studies appears incorrect. In fact, it appears "low" as compared to other areas and not just "intermediate," as the recent status review itself stated that this value "is low compared to other areas and annually variable."

*Response:* As stated above (see response to Comment 20), the West Indies population unit has been proposed by NMFS as a DPS as a result of the ESA global status review of humpback whales. This proposed DPS is not directly relevant to the MMPA Gulf of Maine stock. Metapopulation segments commonly have (or are usually expected to have) different demographic patterns if those populations are not growing; thus it would be common for different segments to have differing mortality rates and subsequent productivity rates. Hence, we cannot presume that integrated population statistics reflect that of individual segments. We removed the word "intermediate."

*Comment 23:* The Gulf of Maine humpback whale SAR underestimates the level of mortality for this stock; more recent literature is available and should be used. Reference is made to the likelihood that undocumented entanglements are occurring. We note that Van der Hoop *et al.* (2013) found that between 1970-2009, cause of death was

not undetermined for nearly 60 percent of humpback whale carcasses in the Northwest Atlantic due to decomposition, an inaccessible carcass, or where no necropsy data were provided to indicate cause of death. Similar results were found by Laist *et al.* (2014). Volgenau (1995) is cited for the source of entanglements through 1992. Johnson et al. (2005) found 40 percent of humpback whale entanglements were in trap/pot gear and 50 percent were in gillnet. While even these data are now a decade old, they at least reference gear types involved in humpback entanglements in U.S. waters, not just in Canada.

*Response:* It was an oversight that the Johnson et al. (2005) paper was not included in the draft SAR; it has been included in the final SAR. However, one should be skeptical of estimating gear-specific entanglement rates based on a very small sample size and when one would suspect different levels of detectability among gear types doing harm. In stock assessments for which there is not a statistical model for estimating fisheries interactions, NMFS has consistently maintained the policy that without unambiguous evidence that a stranding was due to human interaction, such strandings will not be attributed to a human cause.

*Comment 24:* In the Gulf of Maine humpback whale SAR, the following cases of dead or seriously injured humpbacks are missing and should be added to Table 2:

- Laist *et al.* (2014) note a dead humpback whale that was attributed to a vessel strike on 7/27/2009 inside the NY seasonal management area.
- *Response:* This carcass was battered against a jetty. A necropsy revealed broken bones, but the animal was so severely decomposed it could not be determined if the fractures were pre- or post-mortem.



- On 6/3/2011 a humpback whale on Jeffreys Ledge was disentangled but noted to be “quite thin and body posture was hunched,” according to record notes on the NMFS and Center for Coastal Studies Large Whale Disentanglement Network website. This animal was noted to be the 2009 calf of the humpback whale known as “Lavalier” and has apparently not been seen since that incident.
- *Response:* This animal has been named “Flyball” and has been resighted in good health.
- On 3/11/2012, this same website noted that a humpback whale had become entangled in gillnet gear off Cape Hatteras, North Carolina and broke free with “some amount of top line and webbing anchored somewhere at the forward end of the whale.” This should be considered for pro-rating as a serious injury.
- *Response:* This event was observed by a trained Northeast Fisheries Observer Program observer. The whale was released with a small section of netting draped over a fluke edge (which corresponds to large whale injury category L3 in the NMFS Procedure for Distinguishing Serious from Non-Serious Injury of Marine Mammals, NMFS Instruction 02-038-01) that it was likely to shed.
- The website notes a humpback whale disentangled but apparently seriously injured on 4/12/2012. The site states “the overall condition of the whale (~30 feet long) seemed poor, indicating that it had been entangled significantly longer than the few days since first report. Line across the back had become ingrown and line around the flukes had left numerous scars, some of which were resolving while others were not. The whale was quite thin and, in aerial

shots, the widest girth of the whale was at the skull. There were patches of whale lice scattered across its body.” This appears to fit within the definition of a serious injury and should, at the very least, be pro-rated as such.

- *Response:* This humpback whale has an entanglement date of 4/7/2012; it was entangled for fewer than five days and the Center for Coastal Studies website also states that “the condition of the whale seems somewhat poor (thin with patches of whale lice) but it is not clear if this is part of a seasonal effect or related to its entanglement.” This whale was entangled again on 4/13/2012 and again disentangled.
- On 1/6/2013, a humpback whale was noted off Virginia Beach with significant line wrapped around its flukes and it was not able to be disentangled. This should be considered a serious injury.
- *Response:* The entanglement configuration shifted, indicating it was not constricting. The final configuration is a non-constricting loop at the fluke insertion which meets our L3 criterion (NMFS Procedure for Distinguishing Serious from Non-Serious Injury of Marine Mammals, NMFS Instruction 02-038-01) and is therefore considered a non-serious injury.

*Comment 25:* In the Gulf of Maine, humpback whale SAR information has been omitted from the Status of Stock section. This section cites the recent NMFS global status review, which included evaluation of the status of *this* stock. The status review states “There are insufficient data to reliably determine current population trends for humpback whales in the North Atlantic overall.” Rather than acknowledging this in the draft SAR, NMFS retains the assertion that “[a]lthough recent estimates of abundance indicate a

stable or growing humpback whale population, the stock *may be below OSP [Optimum Sustainable Population]* in the U.S. Atlantic EEZ” (emphasis added). Indeed, the status review found that the population trend was likely flat and the population had not met goals stipulated in its recovery plan for a sustained growth rate. Given the failure to achieve its recovery plan goals for minimum population and sustained growth rate, and the annual losses due to entanglement and vessel strikes that far exceed the stock’s PBR, it seems clear that the stock *is* below OSP, rather than the NMFS assertion that they “may” be below OSP.

*Response:* This comment blurs statements about two proposed DPSs under the ESA (West Indies and Cape Verde Islands/Northwest Africa) with those about the Gulf of Maine MMPA stock, which is a small segment within one of these proposed DPSs. With regard to the phrase “may be below ...,” scientists nearly always include a caveat for uncertainty in any declaration. We cannot make a conclusive statement with respect to whether a stock is within the OSP range without having conducted an OSP analysis. A population at carrying capacity, when harvested above its current level of productivity (which is quite low for mammals) will show a decline (until productivity increases). A population at OSP will show an increase if harvested (killed) at per capita rates lower than productivity (until productivity declines due to resource scarcity). Theoretically, a population of humpback whales could be at OSP in perpetuity while human-caused mortality removed all the excess; thus, the trend in abundance would be flat, but it remains at OSP.

*Comment 26:* For the Western North Atlantic stock of long-finned pilot whale, it is our understanding that a survey will be conducted in the summer of 2016 that may

provide better data of abundance, given the discrepancy between the more recent survey and an outdated earlier survey — each of which covered a different extent of the range. Until that time, given margins of error, fishery-related mortality appears to be at or possibly over the PBR. We are hopeful that NMFS will resolve the discrepancies in methodology and/or areas surveyed to resolve widely discrepant estimates such as this one.

*Response:* NMFS agrees; the 2016 survey, as well as the abundance analyses underway on surveys through 2014, should provide improved abundance estimates for long-finned pilot whales within this area.

*Comment 27:* NMFS should include within the Western North Atlantic harbor and gray seal SARs a brief mention of high levels of animals observed entangled in fishing-related debris, largely from actively fished gear. The final SARs for both of these species should contain some language and analysis reflecting that a notable percentage of seals in the Gulf of Maine haulouts are seen entangled in fishery-related gear that may result in serious injury.

*Response:* The gray seal SAR currently contains the language, “analysis of bycatch rates from fisheries observer program records likely greatly under-represents sub-lethal fishery interactions. Photographic analysis of gray seals at haulout sites on Cape Cod, Massachusetts revealed 5-8% of seals exhibited signs of entanglement (Sette *et al.* 2009).” Both harbor and gray seal SARs now emphasize the fact that entanglement is an issue with both species, though we have found it less prevalent in harbor seals.

*Comment 28:* Regarding the Gulf of Mexico Bryde’s whale, we are concerned about the level of ship strikes, which are estimated to be 0.2 per year, well above the PBR

of 0.03. It also concerns us that two of the stranded animals are considered to be a part of the unusual mortality event (UME) resulting from the Deepwater Horizon oil spill, which has continued to affect bottlenose dolphins and may be having effects on this stock.

Given the need to include the most recent information, NMFS should include a note that in April 2015, NMFS made a positive 90-day finding on a petition to list this population as “endangered” under the Endangered Species Act.

*Response:* To clarify, the April 2015 finding was that the petition presented substantial scientific or commercial information indicating that the petitioned action may be warranted. Accordingly, NMFS initiated a review of the status of this species to determine if the petitioned action is warranted. NMFS had added text to the SAR noting the positive 90-day finding on the petition (80 FR 18343, April 6, 2015) and our ongoing status review.

*Comment 29:* Mortality for the Gulf of Mexico eastern coastal stock of common bottlenose dolphins cannot be quantified because fisheries known to interact with the stock (including a wide variety of Category II and III fisheries) are not subject to observer coverage and/or the dataset from the observer program is out of sync with the five-year analytical time period used in this SAR. NMFS must either reconsider its observer coverage levels and placement in order to provide timely data for the SARs or it must re-prioritize analysis so that take data and mortality estimates can be incorporated in a timely manner.

*Response:* NMFS agrees that observer coverage and the resulting M/SI data collected through observer programs is essential to assessing marine mammal stocks. Category II fisheries are subject to observer coverage pursuant to the requirements for

Category I and II fisheries in 50 CFR 229.4. Given limited funding, NMFS cannot realistically observe all fisheries that may pose a risk to marine mammals. Anticipating this, the MMPA provides guidance for prioritizing observer coverage with the first priority being commercial fisheries that kill or seriously injure ESA-listed marine mammals, the second priority being strategic stocks, and the third priority being those stocks for which M/SI incidental to commercial fishing is uncertain. NMFS continues to work internally to prioritize funding for observing fisheries across the U.S. given multiple mandates and requirements.

In the 2015 SARs, NMFS provided marine mammal bycatch from the shrimp trawl fishery, which had not been estimated previously. The first bycatch estimate covered 2007-2011 because those were the data available at the time analysis began. The GAMMS suggest: “If mortality and serious injury estimates are available for more than one year, a decision will have to be made about how many years of data should be used to estimate annual mortality. There is an obvious trade-off between using the most relevant information (the most recent data) versus using more information (pooling across a number of years) to increase precision and reduce small-sample bias. It is not appropriate to state specific guidance directing which years of data should be used, because the case-specific choice depends upon the quality and quantity of data. Accordingly, mortality estimates could be averaged over as many years as necessary to achieve statistically unbiased estimation with a coefficient of variation (CV) of less than or equal to 0.3. Generally, estimates include the most recent five years for which data have been analyzed, as this accounts for inter-annual variability. However, information more than five years old can be used if it is the most appropriate information available in

a particular case” (NMFS 2016). NMFS is currently evaluating the appropriate time interval to produce estimates for this fishery and will update the SARs accordingly.

*Comment 30:* Similar to the Eastern Gulf of Mexico stock, data on Northern Gulf of Mexico bottlenose dolphin takes in the shrimp trawl fishery were discarded due to a dyssynchrony in the analytical period with the five-year average in the SAR. Given the low level of observer coverage and the CV, it is possible that this stock is being taken at a level that is around 50 percent of PBR, which would make this fishery a Category I fishery and result in higher priority for observer coverage. We recommend that NMFS re-evaluate observer placement and assure that the level of coverage is sufficient to accurately document and assess fishery impacts.

*Response:* The information was not discarded and is still provided in the SAR (i.e., the 2007-2011 mortality estimate of 21 for the commercial shrimp trawl fishery). Currently, there is only one shrimp trawl bycatch estimate and it is for 2007-2011. The estimate does not fit in the standard five-year time frame that is reported in this SAR (i.e., 2009-2013). The 2007-2011 estimate was not included in the minimum total mean annual human-caused mortality and serious injury for the stock during 2009-2013 (0.4). Additionally, with so many unobserved fisheries (menhaden, crab traps, hook and line, gillnet), any mortality estimate is likely an underestimate. The PBR of the stock is 60 but the true fishery-related mortality and serious injury for 2009-2013 is not known. However, it is clearly stated in the SAR that the mortality estimate is, at a minimum, greater than 10% of the PBR. This is the only definitive statement NMFS can make given current information. NMFS agrees that it is possible that the fishery-related mortality and serious injury could be as much as 50% of PBR. However, given limited fishery

observer resources, there are a number of factors that affect observer coverage prioritization. See response to Comment 29.

*Comment 31:* For the Northern North Carolina Estuarine stock of bottlenose dolphins, data and text regarding the mid-Atlantic coastal gillnet fishery in Table 2 of the draft SAR only go through 2011, although this SAR should have data at least through 2013. A footnote in Table 3 of the draft SAR states that “[m]ortality analyses that use observer data are updated every three years. The next update is scheduled for 2015 and will include mortality estimates for years 2012-2014.” It is not clear why a mortality estimate is only provided every three years when it can be done annually for other stocks.

*Response:* The observed mortality data for the mid-Atlantic coastal gillnet fishery was updated through 2011 because it is only updated every three years for Atlantic coastal bottlenose dolphin stocks. The decision to update the gillnet mortality estimates every three years was reviewed by the Atlantic Scientific Research Group in 2008 after the NEFSC provided a presentation showing the challenges associated with estimating annual mortality with any degree of confidence under a scenario of continued decline in observed interactions. At that time, it was considered an appropriate timeframe for updating observed bycatch mortality for the Atlantic stocks given the very low frequency and inter-annual variability of observed takes (average is less than one observed take per year). Although several of the factors that led to this decision in 2008 still exist today (i.e., mean observed takes less than one per year, status quo levels of observer coverage, and large number of strata due to complexity of stock identification), it became apparent during the 2013 Bottlenose Dolphin Take Reduction Team meeting that the Northern North Carolina Estuarine System stock mortality and serious injury estimate is likely



exceeding its PBR. As a result, NMFS plans to re-evaluate the schedule and methods for updating future observed mortality rates and estimates for Atlantic stocks observed interacting with mid-Atlantic coastal gillnet fisheries.

*Comments on Pacific Regional Reports*

*Comment 32:* Very few Pacific stocks (only four stocks of cetaceans and two stocks) were updated in the draft 2015 SARs. NMFS states "...all others will be reprinted as they appear in the 2014 Pacific Region Stock Assessment Reports (Carretta *et al.* 2015)." If these stocks were reviewed and NMFS determined no update was warranted, NMFS should provide reviewers and other members of the public with information that NMFS has, in fact, complied with MMPA mandates for reviewing and/or revising stock assessments for strategic stocks and not simply neglected to review them.

*Response:* NMFS reviews all SARs annually for potential revision. New data on human-caused mortality and serious injury are published annually, even if they do not appear in revised SARs. Reports may not necessarily be revised every year for strategic stocks, unless new information will result in a status change for that stock or species.

*Comment 33:* NMFS's draft SARs largely address information only through 2013 and contain no updates of large baleen whale stocks within this iteration of the draft SARs. More recent data on increasing numbers of large whale mortalities from ship strikes and entanglements should be considered in the draft SARs. Additionally, when animals involved in these interactions cannot be identified to species, pro-rating to species seems warranted to better understand and quantify anthropogenic impacts on stocks that may be ESA-listed. We encourage NMFS to undertake this effort.

*Response:* NMFS is working on methods to prorate human-caused injury and

mortality of unidentified whale cases to species along the U.S. west coast. These proration methods will be applied to respective SARs following peer review and publication.

*Comment 34:* While we understand that California sea lions are not considered a strategic stock, there has been elevated mortality in this species as part of an on-going UME. This UME was mentioned in the 2014 SAR (updated as of June 2015), although the pup counts are no more recent than 2011 and thus do not reflect possible impacts on productivity and population trends. Population data and updates on the impact of the UME must be included in the next iteration of SARs for 2016, since the ongoing UME and high levels of pup mortality constitute “significant new information” triggering the MMPA’s requirement to conduct a stock assessment.

*Response:* NMFS did not revise the SAR for California sea lions in 2015. The 2014 SAR addressed the UME, but this did not result in a change in the stock’s status under the MMPA.

*Comment 35:* Population data are provided for the Southern Resident stock of killer whales through 2014; NMFS should use more recent data in stock assessments for other species/stocks wherever possible.

*Response:* NMFS utilizes the most recent population data available at the time the draft reports are prepared. In the case of the draft 2015 Southern Resident killer whale report, population size data from 2014 is utilized, because it was available at the time the draft report was prepared. This is not the case for all stocks in all years, where direct enumeration of the stock’s size is less straightforward.

*Comment 36:* Given the status of insular false killer whales, we strongly encourage NMFS to prioritize observers on fisheries such as the short line and kaka line fisheries in which there is either anecdotal report of evidence of injury consistent with fishery interaction as is mentioned in the SAR.

*Response:* Given resource and other constraints, NMFS does not currently have plans to observe state-managed fisheries in Hawaii, but will continue to work with the Hawaii Department of Land and Natural Resources as available resources allow to improve data collection in these fisheries.

*Comment 37:* The draft SAR discusses overlap in distribution of insular and pelagic stocks of false killer whales and takes within the overlap zone. We generally support the method of pro-rating takes to one or the other stock in the overlap zone, as we do the apportioning of observed takes of “blackfish” as either false killer whales or short-finned pilot whales.

*Response:* NMFS will continue to prorate takes of false killer whales among potentially affected stocks and takes of blackfish to species when stock or species-identity of the take is unknown.

*Comment 38:* The draft SAR indicates a decline in population of the Main Hawaiian Islands (MHI) Insular stock of false killer whales from 138 to 92 since the last report. However, the discussion in the section of the draft SAR still cites only literature from 2010 that documented apparent declines from 1989-2007, and provided the results of a Population Viability Analysis that calculated an average rate of decline of nine percent per year. This change in the abundance estimate for this stock since the last SAR estimate is a far greater decline than predicted. The final SAR should contain some

discussion of this apparent decline or provide a stronger caveat for why this estimate may not be reliable.

*Response:* The apparent decline from 138 to 92 noted by the commenter is in the minimum abundance (Nmin), not the total population abundance. Nmin declined for MHI insular false killer whales in the 2015 SAR. Nmin for MHI insular false killer whales is determined based on the number of distinctive individuals seen between 2011 and 2014 and is not corrected for the level of effort or other factors that might have resulted in a lower total count for that period. Analysis of MHI insular false killer whale abundance and trend is ongoing and will be presented in a future SAR.

*Comment 39:* With regard to the pelagic stock of false killer whales, the PBR remains approximately the same as the prior SAR estimate; however, this draft SAR notes that 2014 takes subsequent to the time period covered in the SAR (2009-2013) were “the highest recorded since 2003” although overall bycatch estimates were not available as of the time the SAR was drafted. Even without inclusion of 2014’s excessive mortality and serious injury, the takes for this stock are acknowledged to exceed the PBR for the period 2009-2013 although NMFS states that additional monitoring is required before concluding that the take reduction plan for the stock had failed to meet statutory mandates.

*Response:* NMFS has not yet completed mortality and serious injury estimates for 2014 and provides the information on observed takes only for context on our decision to retain the five-year look-back in the computation of M/SI for comparison to PBR. NMFS is evaluating the effectiveness of the False Killer Whale Take Reduction Plan (FKWTRP) in accordance with the monitoring strategy that was developed in consultation with the

False Killer Whale Take Reduction Team.

*Comment 40:* The reports of M/SI for the California stock of northern fur seal (Table 1) have an apparent inconsistency that is unexplained. Table 1 in the prior SAR provided information on observed mortality for the years 2007-2011. The observed mortality and serious injury for 2011 is said to be 1. However, in Table 1 in the current draft SAR, the observed fishery-related mortality and serious injury listed for 2011 (providing data for 2009-2013), lists observed mortality for the year 2011 as 2. Revised text explaining the table states that “[t]wo of the fishery-related deaths (one in an unidentified fishing net in February 2009 and one in trawl gear in April 2011) were also assigned to the Eastern Pacific stock of northern fur seals.” However, this does not make it clear why the 2009 mortality remained unchanged but the 2011 mortality increased.

*Response:* Data on human-caused M/SI is derived from many sources, including stranding networks, rehabilitation centers, independent researchers, and observer programs. Occasionally, additional human-caused mortality and serious injury records are incorporated into subsequent reports as databases are reviewed or cases are reassessed. In this case, the change regarding the serious injury record was made and reflected in the draft 2015 SAR but had no effect on the strategic status of the stock.

*Comment 41:* The assumed net productivity of the California/Oregon/Washington stock of sperm whales inappropriately ignores at least five peer-reviewed estimates of sperm whale growth rates, all of which fall in the range of 0.6% to 0.96% per year. Also, the conclusion that this stock is stable or increasing has no solid evidentiary support. The Moore and Barlow (2014) population estimate for the stock does not achieve the SAR’s stated goal of improving the precision of population estimates. Estimates of fishery

related mortality of the stock from derelict gear calculated from strandings appear to be ten to twenty times too low, once unobserved mortality and recovery rates are corrected for.

*Response:* NMFS did not revise the sperm whale SAR in 2015 and responded to similar comments on the 2014 sperm whale SAR in the *Federal Register* on August 20, 2015 (80 FR 50599; see response to Comment 21).

*Comment 42:* The Moore and Barlow (2014) analysis of the California/Oregon/Washington stock of sperm whales appears to lack the statistical power to detect trends in the population, which elevates risks to cetaceans.

*Response:* See response to Comment 41. NMFS will consider and address this comment when we next review this SAR in the future.

*Comment 43:* The HLA encourages NMFS to make additional improvements to the draft 2015 false killer whale SAR, by eliminating the five-year look-back period for the false killer whale SAR, and reporting only data generated after the FKWTRP regulations became effective. For example, the draft 2015 SAR should report M/SI values based on 2013 and 2014 data, and the data prior to 2013 should no longer be used because it is no longer part of the best available scientific information.

*Response:* The GAMMS (NMFS 2005) suggest that if there have been significant changes in fishery operations that are expected to affect take rates, such as the 2013 implementation of the FKWTRP, the guidelines recommend using only the years since regulations were implemented. However, recent studies (Carretta and Moore 2014) have demonstrated that estimates from a single year of data are biased when take events are rare, as with false killer whales in the Hawaii-based longline fisheries. Further, although

the estimated M/SI of false killer whales within the U.S. Economic Exclusion Zone (EEZ) around Hawaii during 2013 (4.1) is below the PBR (9.3), this estimate is within the range of past, pre-take reduction plan (TRP) estimates, so there is not yet sufficient information to determine whether take rates in the fishery have decreased as a result of the TRP. Further take rates from 2014 are among the highest recorded, suggesting TRP measures may not be effective, and the change in fishery operation may not be significant enough to warrant abandoning the five-year averaging period. For these reasons, the strategic status for this stock has been evaluated relative to the most recent five years of estimated mortality and serious injury.

*Comment 44:* For a decade, NMFS has reported a M/SI rate for the deep-set fishery that far exceeds PBR for the Hawaii pelagic false killer whale stock (“Pelagic Stock”). However, the best available information suggests that the number of false killer whales in the Hawaii EEZ has not declined during the same time that the supposedly unsustainable M/SI rate was occurring. HLA disagrees with the M/SI levels reported in the draft SAR and with NMFS’ conclusion that the vast majority of all fishery interactions with the Pelagic Stock cause injuries that “will likely result in mortality.” If that were the case, then after a decade or more of allegedly unsustainable levels of take, there would be some evidence of a declining Pelagic Stock abundance. No such evidence exists. The draft SAR should expressly recognize this discrepancy, and NMFS should revisit the manner in which it determines M/SI for false killer whale interactions.

*Response:* This comment has been addressed previously (see 78 FR 19446, April 1, 2013, comments 45 and 51; 79 FR 49053, August 18, 2014, comment 26; and 80 FR 50599, August 20, 2015, comment 34). The comment and included footnote contend that

the stock abundance has not declined (as opposed to prior year comments that indicated the stock was increasing) in over a decade and attributes this persistence of false killer whales despite high levels of fishery mortality to NMFS' improper assessment of the severity of injuries resulting from fisheries interactions, improper assessment of population abundance and trend, or both. Assessment of injury severity under the NMFS 2012 serious injury policy has been discussed in numerous previous comment responses and is based on the best available science on whether a cetacean is likely to survive a particular type of injury. Further study of false killer whales would certainly better inform the assigned outcomes; but, until better data become available, the standard established in the NMFS 2012 policy on distinguishing serious from non-serious injuries will stand.

Further, assessments of pelagic false killer whale population trend are inappropriate, as the entire stock range is unknown, but certainly extends beyond the Hawaii EEZ, such that the available abundance estimates do not reflect true population size. A robust assessment of population trend would require assessment of environmental variables that influence false killer whale distribution and the proportion of the population represented within the survey area during each survey period. Finally, many years of unsustainable take does not automatically lead to the conclusion that the population is declining. PBR was designed to provide a benchmark, in the face of uncertainty about marine mammal populations, below which human-caused mortalities would not reduce the population beyond its OSP size, which is defined as the abundance where there is "the greatest net annual increment in population numbers or biomass resulting from additions to the population due to reproduction and/or growth less losses due to natural mortality." The benchmark does not consider whether a population is



declining, as this is very hard to prove, particularly for population abundance estimates with low precision.

*Comment 45:* HLA incorporates by reference its more specific comments on the draft 2014 SAR related to the 2010 Hawaiian Islands Cetacean Ecosystem and Assessment Survey (HICEAS) and the assumptions made by NMFS based upon the data from that survey. In addition, HLA emphasizes its repeated requests that NMFS publicly disclose information regarding the acoustic data acquired in the 2010 HICEAS survey. Substantial acoustic data was acquired during that survey, but NMFS still has not provided any meaningful analysis of that data or, for example, any basic indication of how many false killer whale vocalizations have been identified in the acoustic data. The acoustic data from the 2010 HICEAS survey contains information directly relevant to false killer whale abundance, and it must be analyzed by NMFS and reported in the false killer whale SAR, which must be based on the best available scientific information.

*Response:* Analysis of the acoustic data is a labor intensive and time-consuming process, particularly as automated methods for detection, classification, and localization are still improving. There were many changes in array hardware during the survey, further complicating streamlined analyses of these data. Portions of the data have been analyzed to verify species identification, assess sub-group spatial arrangements, or other factors. A full-scale analyses of this dataset for abundance is likely not appropriate, though NMFS is further evaluating this in light of planning for upcoming HICEAS surveys.

*Comment 46:* The draft SAR assigns a recovery factor of 0.5 to the Pelagic Stock of false killer whales, which is the value typically assigned to depleted or threatened

stocks, or stocks of unknown status, with a mortality estimate CV of 0.3 or less.

However, the Pelagic Stock is not depleted or threatened, nor is its status unknown. Since NMFS began estimating Hawaii false killer whale abundance in 2000, as more data have been obtained, more whales have been observed and the population estimates have increased from 121 in 2000 (a recognized underestimate for all false killer whales in the EEZ) to 268 in 2005, 484 in 2007, 1,503 in 2013, and 1,540 at present. Similarly, the incidence of fishery interactions with the Pelagic Stock has not decreased, nor has the rate of false killer whale depredation of fishing lines decreased (if anything, it has increased). All of the available data contradict any hypothesis that false killer whales in the Hawaii EEZ are decreasing. This status should be accurately reflected with a recovery factor that is greater than 0.5 (i.e., closer to 1.0 than to 0.5).

*Response:* This comment has been addressed previously (see 80 FR 50599, August 20, 2015, comment 36). Reanalysis of existing datasets to derive more precise estimates does not constitute an increase in population size. There are two EEZ-wide estimates of abundance and the current status of pelagic false killer whales is unknown. This population may be reduced given fishing pressures within and outside of the EEZ over several decades. The status of Hawaii pelagic false killer whales is considered unknown because there are no trend data available to evaluate whether the population is increasing, stable, or declining. The recovery factor for Hawaii pelagic false killer whales will remain 0.5, as indicated, for a stock with a CV for the mortality and serious injury rate estimate that is less than or equal to 0.30.

*Comment 47:* HLA appreciates that NMFS has now acknowledged that the range of the MHI insular false killer whale stock (“Insular Stock”) should be modified, based

upon the best available scientific information. Although the range reported in the draft 2015 SAR is still overbroad (i.e., it encompasses areas where no Insular Stock animals have been observed), it is a much more accurate representation of the Insular Stock's range than has been reported in previous SARs.

*Response:* NMFS reassessed the stock range of all three stocks of false killer whales in Hawaii based on all data available. NMFS will consider future stock boundary revisions if new data become available that indicate the revised stock boundary should be reconsidered.

*Comment 48:* As with past draft SARs, the draft 2015 SAR attributes M/SI by the deep-set fishery to the Insular Stock. For at least the following two reasons, these attributions are inappropriate and contrary to the best available scientific information. First, there has never been a confirmed interaction between the deep-set fishery and an animal from the Insular Stock. Although there is anecdotal evidence of Insular Stock interactions with nearshore shortline fisheries and other small-scale fishing operations, none of these are documented or reliably reported and none implicate the Hawaii-based longline fisheries, which have been excluded from nearshore fishing grounds for many years.

Second, as NMFS recognizes in the draft 2015 SAR, the range for the Insular Stock is, appropriately, much smaller than was previously assumed by NMFS. When this new range is taken into account, along with the TRP-based year-round closure of the area to the north of the MHI, there is only a very, very small area in which longline fishing may overlap with the assumed range of the Insular Stock. No false killer whale interaction by the deep-set fishery has ever occurred in this area. It is therefore incorrect,

and contrary to the best available information, to state that the deep-set fishery, as currently regulated, is “interacting with” the Insular Stock.

*Response:* The commenter is correct that using the new MHI insular false killer whale stock range and the longline exclusion area required under the FKWTRP, there is little overlap between the MHI insular stock and the longline fishery. However, there are still small areas of overlap and fishing effort in this area is non-zero. It is rare that the stock-identity of a hooked or entangled whale can be determined, and as such NMFS follows the GAMMS and apportions those takes of unknown stock to all stocks within the fishing area. NMFS has carried out this apportionment based on the distribution of fishing effort in areas of overlap between stocks and the fishery.

*Comment 49:* The substantial revision to the minimum population estimate for the Insular Stock is unexplained, and NMFS’ assumption that the Insular Stock has declined is speculative.

*Response:* NMFS makes no assumption that MHI insular stock abundance has declined in the last year (see response to Comment 38). The minimum estimate reflects the number of individuals enumerated during the stated period and may reflect not only changes in actual population abundance, but also changes in encounter rates due to survey location or animal distribution.

*Comment 50:* The proration assumptions used in the draft 2015 SAR do not reflect the best available scientific information. The 2015 draft SAR, like previous SARs, continues to allocate additional false killer whale interactions to the fisheries in a manner that lacks a rational basis. HLA incorporates by reference its objections to NMFS’s attributions for “blackfish” interactions and for interactions in which no injury

determination has been made. In addition, NMFS's new method for allocating false killer whale interactions within the EEZ is not appropriate for interactions that occur with the shallow-set fishery, which has 100% observer coverage. All shallow-set fishery interactions should be attributed based only on the location of the interaction because those interactions are not extrapolated.

*Response:* False killer whale bycatch proration reflects the best available information on the species and injury status of cetaceans observed hooked or entangled in the longline fishery. First, NMFS prorates injuries with a status of "cannot be determined" (CBD) according to the ratio of known serious and non-serious injuries. To treat all CBD cases as non-serious would be a clear under-representation of total M/SI within the fishery. This proration is supported within the GAMMS, judged by NMFS, and supported by external peer-review, as the best approach for appropriately accounting for injuries whose injury status cannot be determined based on the information provided by the observer. Second, when a species code of "unidentified blackfish" has been assigned to an interaction by the NMFS Pacific Islands Regional Office Observer Program, the Program has determined that the species identity is either false killer whale or short-finned pilot whale. This species assignment is much more specific than "unidentified cetacean" (there are 52 cetacean species). Because the species identity is known within two possible candidates, NMFS has used all other interactions with those two species to develop a proration model for assigning these blackfish interactions to be false killer whales or short-finned pilot whales. All available interaction data inform the proration scheme. Cetacean interactions with a species identity of "unidentified cetacean" are not currently prorated to any specific species and are therefore not included in any

assessment of mortality and serious injury.

NMFS appreciates that the explanation for the proration of shallow-set fishery interactions was not entirely clear within the draft SAR and has updated the language to be more explicit about the treatment of interactions within that fishery. Shallow-set fishery interactions have not been extrapolated or prorated among regions. Shallow-set fishery interactions are only prorated among stocks if the take occurred within an overlap zone.

#### *Comments on Alaska Regional Reports*

*Comment 51:* Among its comments on the draft 2014 SARs, the Commission recommended that NMFS: 1) “provide an update on the status of the development of a statewide program for monitoring subsistence hunting and harvests,” and 2) “[adjust] the language in the SARs ... to reflect these efforts and address the concerns about [the] shortcoming[s]” with regard to reporting subsistence harvests. The Commission recognizes and appreciates the corresponding updates made by NMFS to the draft 2015 SARs for ringed, ribbon, and bearded seals, and encourages NMFS to continue to provide updated information wherever it is available, even if only for a limited number of villages or a subset of years. In addition, the Commission recommends that NMFS pursue the funding necessary for more comprehensive surveys of native harvests of marine mammals. The Commission is open to providing what support it can to NMFS’ survey efforts and to helping address the lack of funding for such a program.

*Response:* NMFS recently conducted a protected species science program review of the Alaska Fisheries Science Center (AFSC). The review generated several recommendations. Recommendation 1.6 directs NMFS to pursue support for bycatch and

harvest monitoring in particularly risky fisheries or regions. The AFSC response notes that monitoring harvest levels is currently unfunded, and while resources are limited the AFSC will work with the NMFS Alaska Regional Office to develop a joint list of priorities for understanding harvest levels so both entities can solicit additional resources and coordinate to achieve this objective. We welcome the opportunity to collaborate with other organizations, including the Commission, who might have funding to support this critical information need.

*Comment 52:* In the draft 2014 SAR for the North Pacific stock of right whales, NMFS has removed the following statement at the end of the PBR section: “Regardless of the PBR level, because this species is listed under the Endangered Species Act and no negligible impact determination has been made, no human-caused takes of this population are authorized; PBR for this stock is 0.” Elsewhere the report states that the eastern stock of North Pacific right whales “is currently the most endangered stock of large whales in the world for which an abundance estimate is available.” In addition, NMFS acknowledges that, given documented threats to North Atlantic right whales, North Pacific right whales are at risk of entanglement in fishing gear and ship strike, and that because of limited information on the population, and limited stranding program coverage in Alaska, these risks cannot be easily quantified. The calculated PBR of 0.05 for this stock suggests that the population could sustain one take in twenty years. However, only one-third of the population of approximately 30 individuals is female; therefore, the loss of just one female would have serious consequences for population recovery. Given the status of the population, the risks it faces, and the extreme uncertainty about the magnitude of those risks, the Commission recommends that NMFS

replace the statement above with a statement that recognizes that the stock cannot sustain any losses and therefore PBR should be set at zero.

*Response:* Pursuant to section 117 of the MMPA, NMFS has included an estimate of the stock's PBR in the SAR. However, this calculated PBR is considered unreliable because the stock's population dynamics do not conform to underlying assumptions about the population growth model for marine mammals in the PBR equation. Therefore, we will add the following sentence to the end of the PBR section in the final 2015 North Pacific right whale SAR: "However, because the North Pacific right whale population is far below historical levels and considered to include less than 30 mature females, the calculated value for PBR is considered unreliable."

*Comment 53:* We disagree with the draft SARs change of PBR for the North Pacific right whale from 0 to 0.05, which would be the equivalent to one take every 20 years because there is no take from this population that will allow the stock to reach its OSP. The low abundance in and of itself may inhibit recovery. One example is that Pacific right whales rarely have epibiotic barnacles, possibly because the barnacles have declined at the same time as the whales; and, thus, the whales have now lost protection that barnacles offered from killer whale attacks. The low estimated minimum abundance (25.7) for this population dictates that there is no take level that will not negatively affect recovery; thus, PBR ought to be zero until the population increases to a point where the Allee effect is weak or non-existent. NMFS' reliance on a purely quantitative definition of PBR leads to illogical results because PBR will essentially never be calculated to be zero unless the minimum population estimate is zero. NMFS recognized as much in the 2014 SAR when it assigned a PBR of 0, irrespective of the result of the calculation,



because the species is listed under the ESA, no negligible impact determination has been made, and no human-caused takes of this population were authorized. And NMFS's treatment of PBR for North Pacific right whales is entirely inconsistent with its approach for North Atlantic right whales, which were assigned a PBR of 0 when the minimum population estimate was 345 individuals, because of the significant threat of extinction facing the population.

*Response:* See response to Comment 52.

*Comment 54:* In general, the SARs' estimation of animals being killed or seriously injured in commercial fisheries is inadequate, and it is misleading to assume no serious injury or mortality occurs where a fishery has not been observed. The Alaska SRG noted that the federally-managed fisheries generally provide estimates of marine mammal takes but that state-managed nearshore fisheries, "especially those using gillnets, operate in areas used by large numbers of marine mammals and use gear types known to catch mammals, turtles, and seabirds worldwide." The SRG notes that more than half of the state-managed Category II fisheries that were to be observed through the Alaska Marine Mammal Observer Program have not been observed at all. It is vital that NMFS meet its obligations to provide updated information on fisheries interacting with the estimated level of mortality and serious injury to which stocks are subjected by commercial fisheries.

*Response:* NMFS acknowledges the need to provide updated estimations of marine mammal M/SI for fisheries that interact with marine mammals. While many federal fisheries in Alaska are regularly observed, with marine mammal M/SI data collected, the agency does not have sufficient resources to fully monitor all Alaska state-

managed salmon gillnet fisheries. With the implementation of the 1994 amendments to the MMPA, the process for classifying commercial fisheries under the annual List of Fisheries was revised to take into account each marine mammal stock's PBR level relative to a fishery's M/SI from each marine mammal stock. NMFS has maintained in the two decades since then that observer data is the most reliable source of M/SI estimates. Although some anecdotal information on marine mammal M/SI does come from stranding and fishermen's self-reports, that information is not considered as comprehensive or statistically reliable as observer data.

With implementation of section 118 of the MMPA amendments in 1994, eight Alaska state-managed salmon gillnet fisheries were classified as Category II fisheries (per 50 CFR 229.2), despite a lack of observer data on incidental M/SI or in some cases even anecdotal take reports, to allow for future collection of statistically reliable M/SI data. This action was based on the understanding that gillnets are known to incidentally catch marine mammals in the rest of the United States and throughout the world. Of those eight fisheries, five fisheries have been observed, once each for a two-year period (although the Southeast Alaska salmon drift gillnet fishery has been observed in only a portion of its range to date). The remaining three unobserved fisheries from that original list of eight are the Bristol Bay salmon set and drift gillnet fisheries and the Alaska Peninsula salmon set gillnet fishery. Three other salmon gillnet fisheries were observed prior to 1994 and have not been observed again. NMFS acknowledges that this level of coverage since the 1994 MMPA amendments does not adequately meet the need for robust, timely M/SI estimates that the section 118 framework for fishery-marine mammal interactions requires. If a fishery has previously been observed, but is not currently

observed, the estimates derived from available observer data are considered the best available until they can be updated. If a fishery has never been observed, the level of marine mammal M/SI is considered unknown. The agency does not assume that the level of M/SI is zero if a fishery is not observed. Where necessary, we will clarify this in the Alaska SARs.

As additional resources become available, NMFS will seek to provide more robust observer coverage of the state-managed Category II gillnet fisheries in Alaska, including gillnet fisheries that have never been observed, as well as to update existing M/SI estimates. However, NMFS is reviewing ways to assess the marine mammal M/SI in these fisheries in a more economical manner.

*Comment 55:* While we applaud the recent research into harbor porpoises in Southeast Alaska, it appears that too little data collection has occurred to prevent undetected population declines. We request with urgency that: 1) NMFS redefine the SE AK harbor porpoise stock into two stocks – one at Glacier Bay/Icy Strait and one near Wrangell and Zarembo Islands, and 2) require observer coverage in the salmon and Pacific herring fisheries, which may be contributing to the decline in the Wrangell and Zarembo stock. The draft SARs note that Dahlheim et al. (2015) suggest that these areas may represent different subpopulations and incidental takes from commercial fisheries are concerning. In this situation, the benefit of the doubt should go to conservation of the marine mammals. We note that Chairman Lowry of the SRG stated that harbor porpoise are at the top of the SRG’s list of concerns. We hope that the final SARs can address this concern by identifying two separate stocks of harbor porpoise in Southeast Alaska.

*Response:* There are two key issues: available data and process. Prior to

developing the draft 2015 SAR for Southeast Alaska harbor porpoise, Alaska Fisheries Science Center (AFSC)'s Marine Mammal Laboratory (MML) staff discussed available information on Southeast Alaska harbor porpoise groups with experts on harbor porpoise on the west coast and in Alaska. The group of experts discussed multiple lines of evidence that might support at least two separate stocks, and they identified additional supporting studies, including genetics and satellite tagging, which would be useful in making this determination. NMFS is supporting such studies as resources are available. In the meantime, NMFS used information provided in Dahlheim et al. (2015) to calculate an Nmin and putative PBR level for the harbor porpoise group in the Wrangell and Zarembo Islands area of the inside waters of Southeast Alaska in the draft 2015 SARs and will be using information in Dahlheim et al. (2015) to calculate an Nmin and putative PBR level for the concentrations of harbor porpoise in the northern and southern regions of the inside waters of Southeast Alaska in the draft 2016 SARs. NMFS will evaluate whether these harbor porpoise groups should be considered "prospective stocks" in future SARs and will continue to review new information on harbor porpoise to assess whether formal designation of multiple stocks in Southeast Alaska is appropriate.

Identification of a new stock is considered a major change to a SAR and should be proposed in a draft SAR so it has the benefit of being reviewed by the SRG and the public. NMFS does not make a change like this in a final SAR but will consider making this change in a future draft SAR for this stock if the available data support such a change.

Further, Category II fisheries, including many of the Alaska state-managed gillnet fisheries, are already subject to observer coverage. See response to Comment 29

regarding prioritizing observer coverage and funding.

*Comment 56:* NMFS updated the assessment for humpback whale, Central North Pacific stock, based on an unpublished multi-strata model (Wade *et al.*, in review) that, to our knowledge, is not publicly available and thus cannot be commented upon effectively. Peer-reviewed literature should be a primary source of information for SARs.

*Response:* Since Wade *et al.* (in review) has not been published, we have removed the updated population estimates (based on this paper) from the final 2015 Central North Pacific and Western North Pacific humpback whale SARs.

*Comment 57:* NMFS has declared a large whale UME because of elevated strandings since May 2015. Through December 1, 2015, there have been 45 large whales stranded, at least eleven of which were fin whales (as of mid-August). The SARs should reflect updated information on the extent of the strandings in order to provide relevant context for the information reported in the SARs.

*Response:* We will add information about the Large Whale UME in the western Gulf of Alaska to the draft 2016 Northeast Pacific fin whale, Central North Pacific humpback whale, and Western North Pacific humpback whale SARs.

*Comment 58:* The SARs should incorporate known data about spatial and temporal overlap of bowhead whales and Alaska fisheries in order to approximate areas and times of highest risk of entanglements that may go unobserved or unreported. The draft SAR notes a couple of incidents of historical entanglements of bowhead whales in commercial fisheries in Alaska, but should be updated to acknowledge the spatial overlap of certain fisheries with this stock, per Citta *et al.* (2014).

*Response:* NMFS has updated the Fisheries Information section of the final 2015

Western Arctic bowhead whale SAR to incorporate a reference to Citta et al.'s (2014) findings on the stock's spatial and temporal overlap with commercial pot fisheries in the Bering Sea.

*Comment 59:* The discussion of habitat concerns for bowhead whale should be updated to recognize the work of Blackwell et al. (2015), which showed that bowhead whales exhibit different behavioral responses depending on noise thresholds when in proximity to seismic operations. Calling rates first increase when the initial airgun pulses are detected, then decrease rapidly when airgun sounds exceed a threshold.

*Response:* NMFS has updated the Habitat Concerns section of the final 2015 Western Arctic bowhead whale SAR with a reference to Blackwell et al.'s (2015) study.

Dated: June 9, 2016.

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